

- A1
Cont
- SUB D1)
Cont
- (a) obtaining DNA profile data that include a mixed DNA sample;
 - (b) representing the data and a genotype contained in the DNA mixture in a set of linear equations;
 - (c) deriving a mathematical solution from the linear equations; and
 - (d) determining the genotype from the solution.
-

A2

19. ^{AMENDED} A method as described in Claim 17 wherein the representing step (b) includes a matrix or vector representation of the set of linear equations.

A3

21. ^{AMENDED} A method as described in Claim 17 wherein the deriving step (c) includes performing a matrix operation on the linear equations.

22. ^{AMENDED} A method as described in Claim 17 wherein the determining step (d) produces an estimate of the genotype of an individual.

Please add the new claims 23-30 as follows:

SUB D2)

23. A method as described in Claim 17 wherein the determining step (d) produces an estimate of a proportion or weight of an individual's DNA contained in the mixed DNA sample.

A4

24. A method as described in Claim 17 wherein the determining step (d) produces an estimate of the quality of the determined solution.

25. A method as described in Claim 19 wherein the matrix representation has a term that includes a matrix multiplication of a genotype matrix and a weight matrix.

26. A method as described in Claim 22 wherein after the determining step (d), the estimated genotype is matched against a suspect genotype.

27. A method as described in Claim 26 wherein the suspect genotype is drawn from a database of candidate suspect genotypes.
